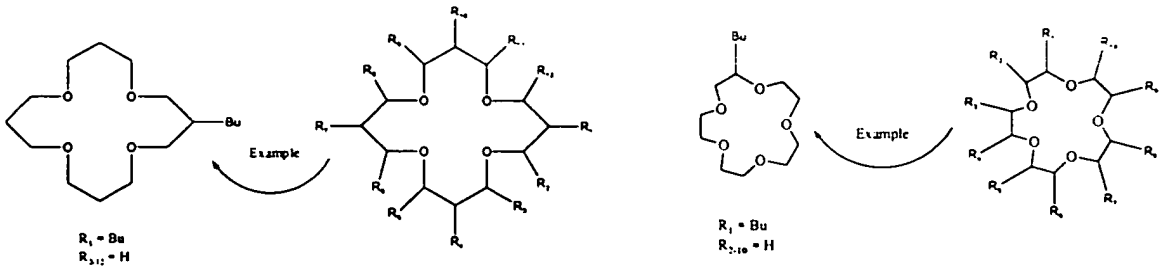


Figure 1 Potential crown ethers that can be used to make ionic liquids.

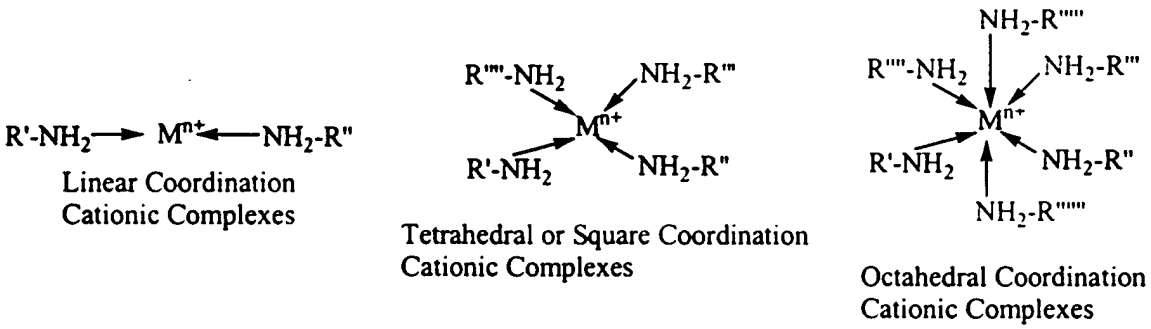


Figure 2 Structural features of the cations in new ionic liquids made by the complexation reactions of neutral amine ligands with metal ions.

FIG 3

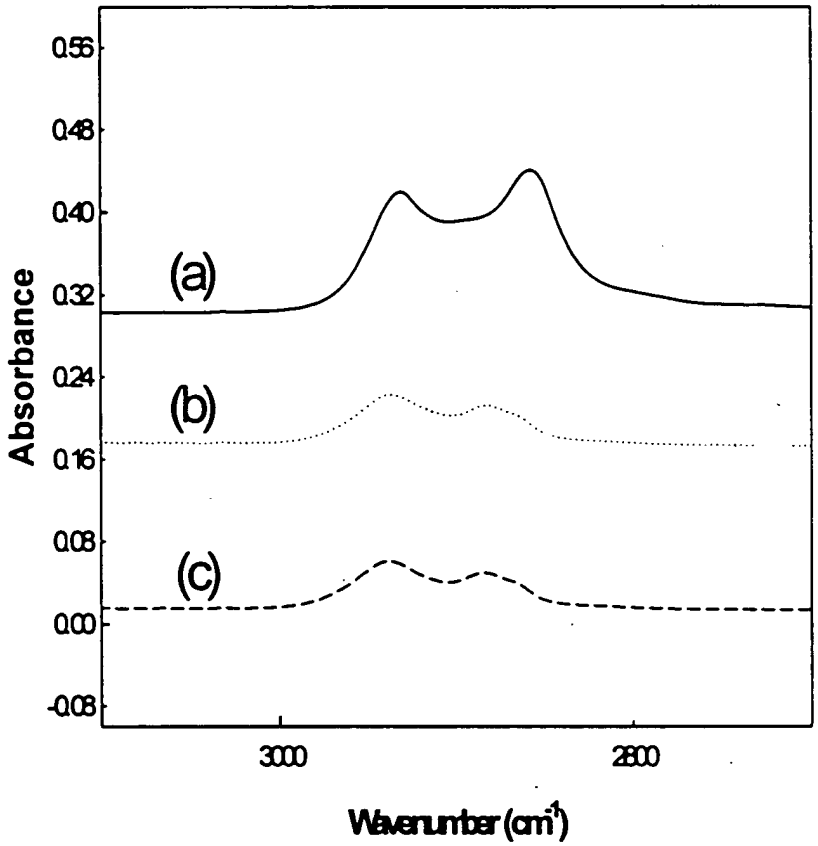


Figure Comparison of FTIR spectra of (a) pure cyclohexo-15-crown-5 and RTILs prepared with the mole ratios of cyclohexo-15-crown-5 to $LiTf_2N$ = (b) 1:1 and (c) 1:1.35, respectively.

Fig. 7.

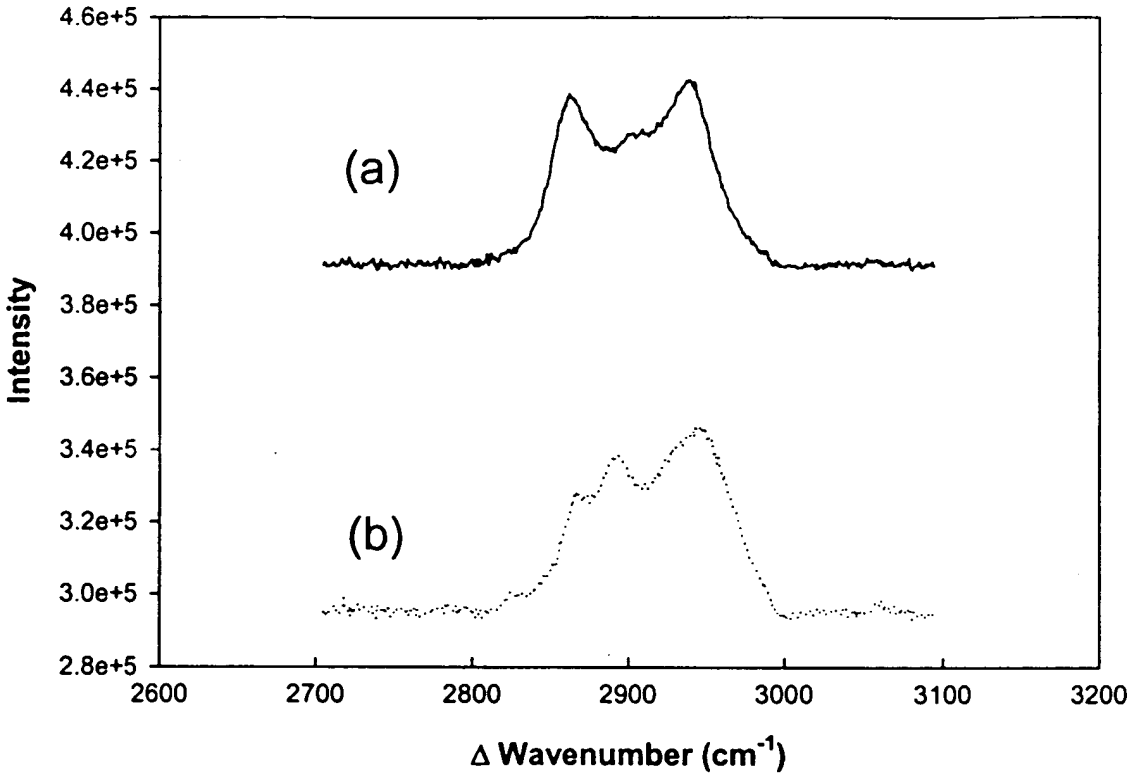


Figure. S1 Raman spectra of (a) pure cyclohexo-15-crown-5 and (b) RTIL prepared with the mole ratio of cyclohexo-15-crown-5 to $LiTf_2N$ = 1:1 in C-H stretching region.

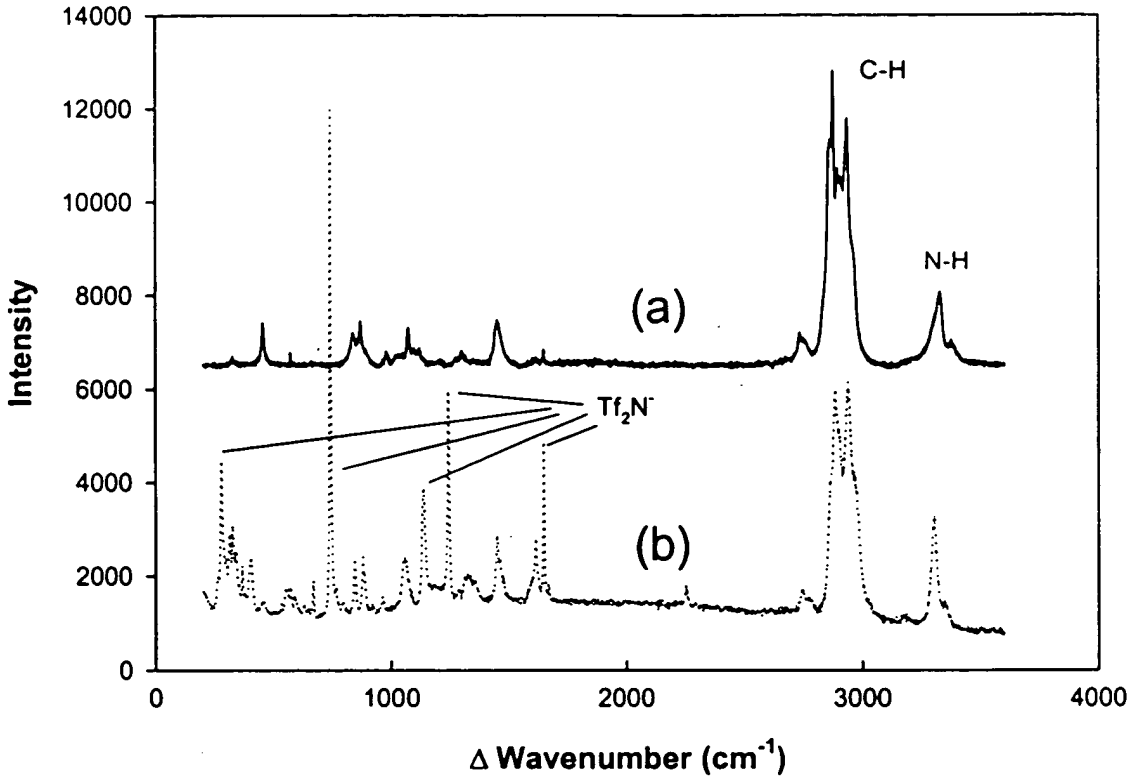


Figure 2S. Raman spectra of (a) propylamine and (b) $Ag(H_2N\text{-}C_3H_7)_2^+$ Tf_2N^- RTIL.

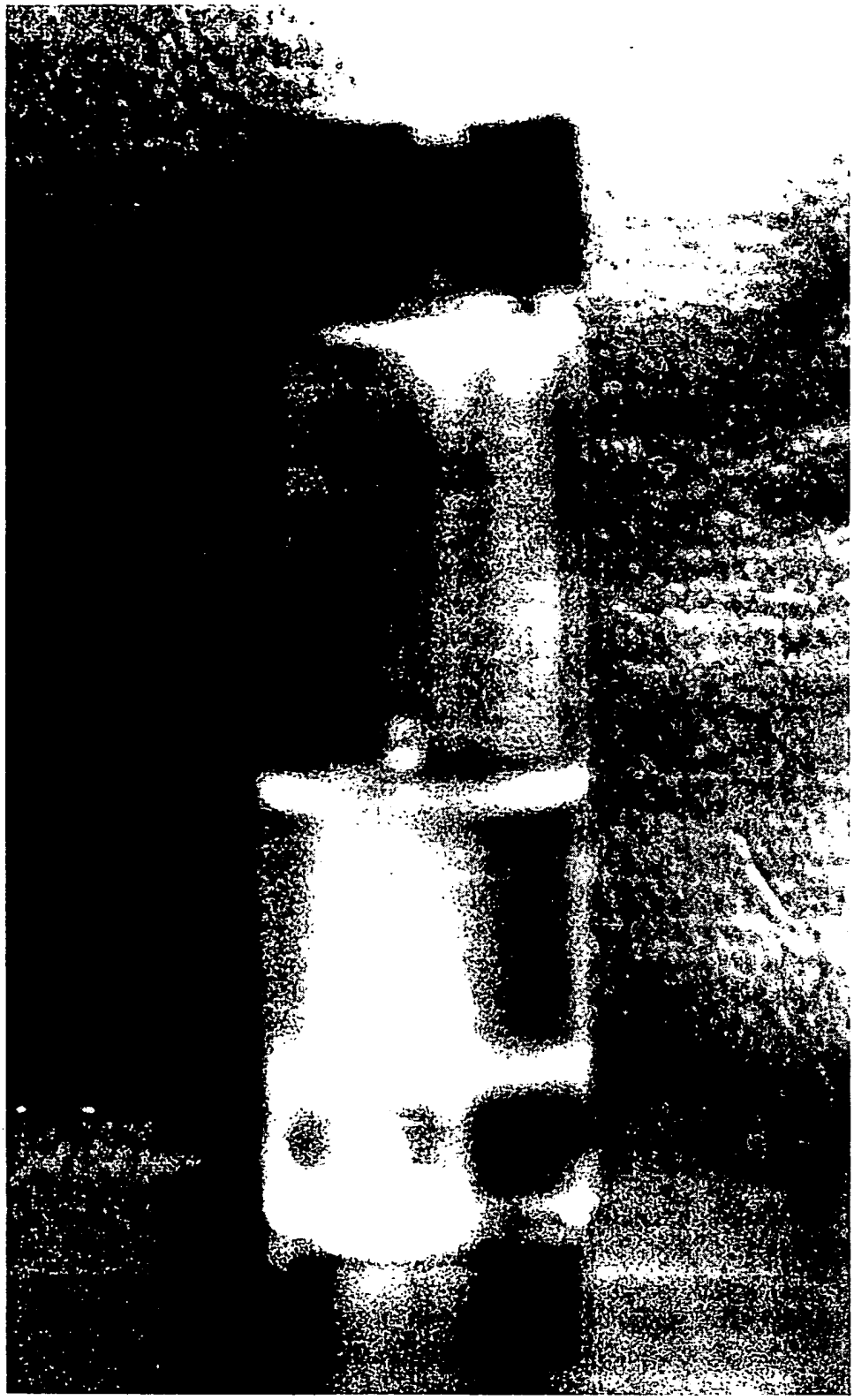
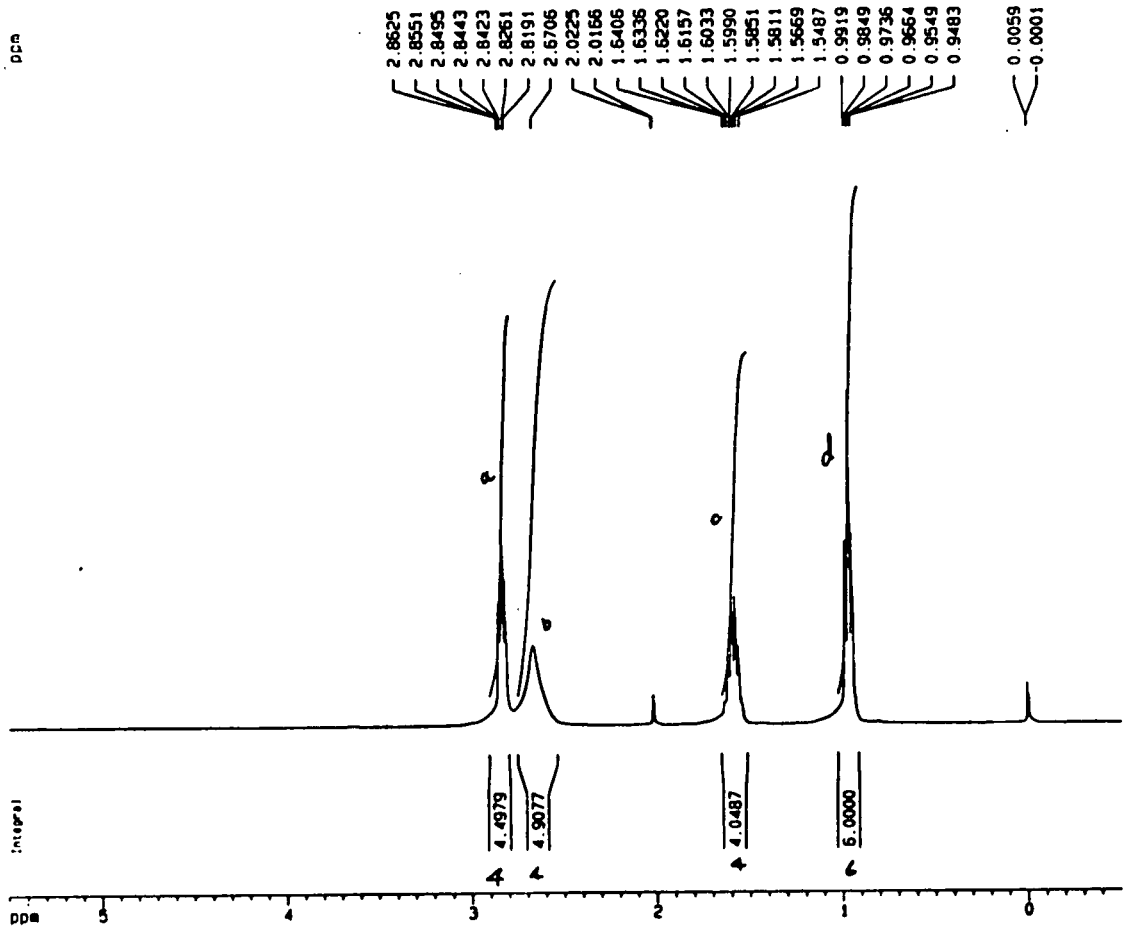


Figure 3S. Photograph picture showing phase separation of $Ag(H_2N\text{-}C_3H_7)_2^+$ Tf_2N^- RTIL and water.

$\overset{\oplus}{Ag}\cdot(NH_2CH_2CH_2CH_3)_2\,Tf_2N$ (a b c d) after wash



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EXPNO 1
PROCNO 1

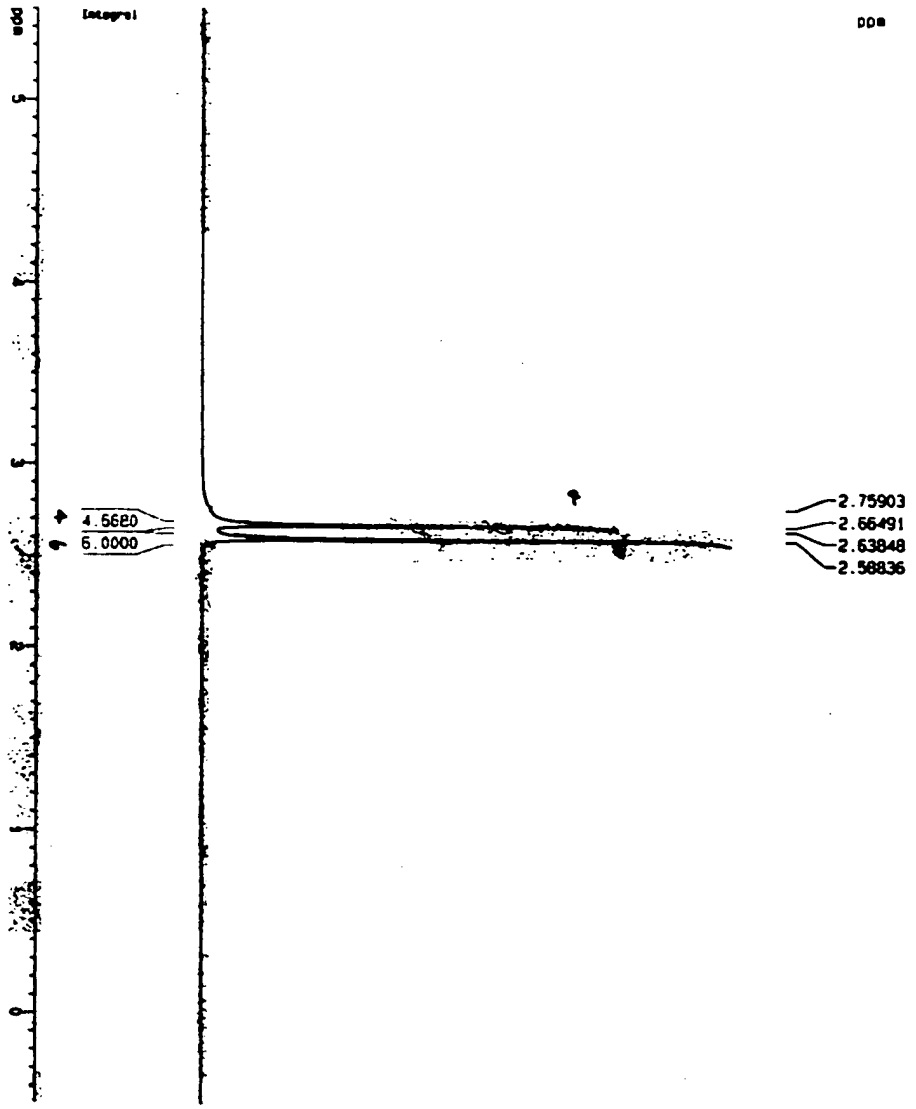
F2 - Acquisition Parameters
Date_ 20031006
Time 12.46
INSTRUM spect
PROBHD 5 mm Multinu
PULPROG zg
TD 32768
SOLVENT CDCl3
NS 8
DS 0
SWH 5630.631 Hz
FIDRES 0.171833 Hz
AQ 2.9098485 sec
RG 71.8
DW 88.800 usec
DE 6.00 usec
TE 300.0 K
D1 2.00000000 sec

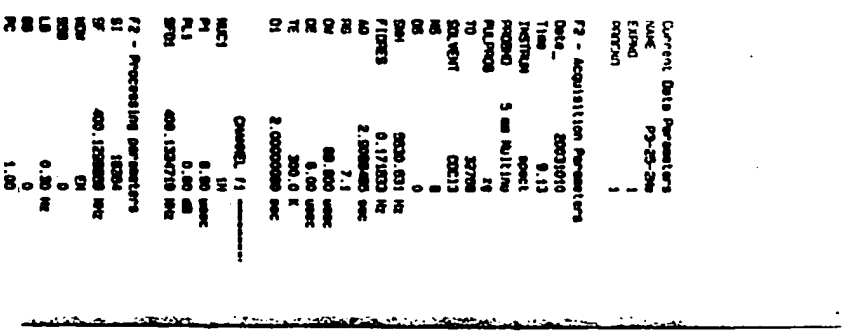
------------ CHANNEL f1 --------
NUC1 1H
P1 8.80 usec
PL1 0.00 dB
SFO1 400.1324710 MHz

F2 - Processing parameters
SI 16384
SF 400.1300041 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

1D NMR plot parameters
CX 20.00 cm
F1P 5.500 ppm
F1 2200.72 Hz
F2P -0.500 ppm
F2 -200.06 Hz
PPMCM 0.30000 ppm/cm
HZCM 120.03900 Hz/cm

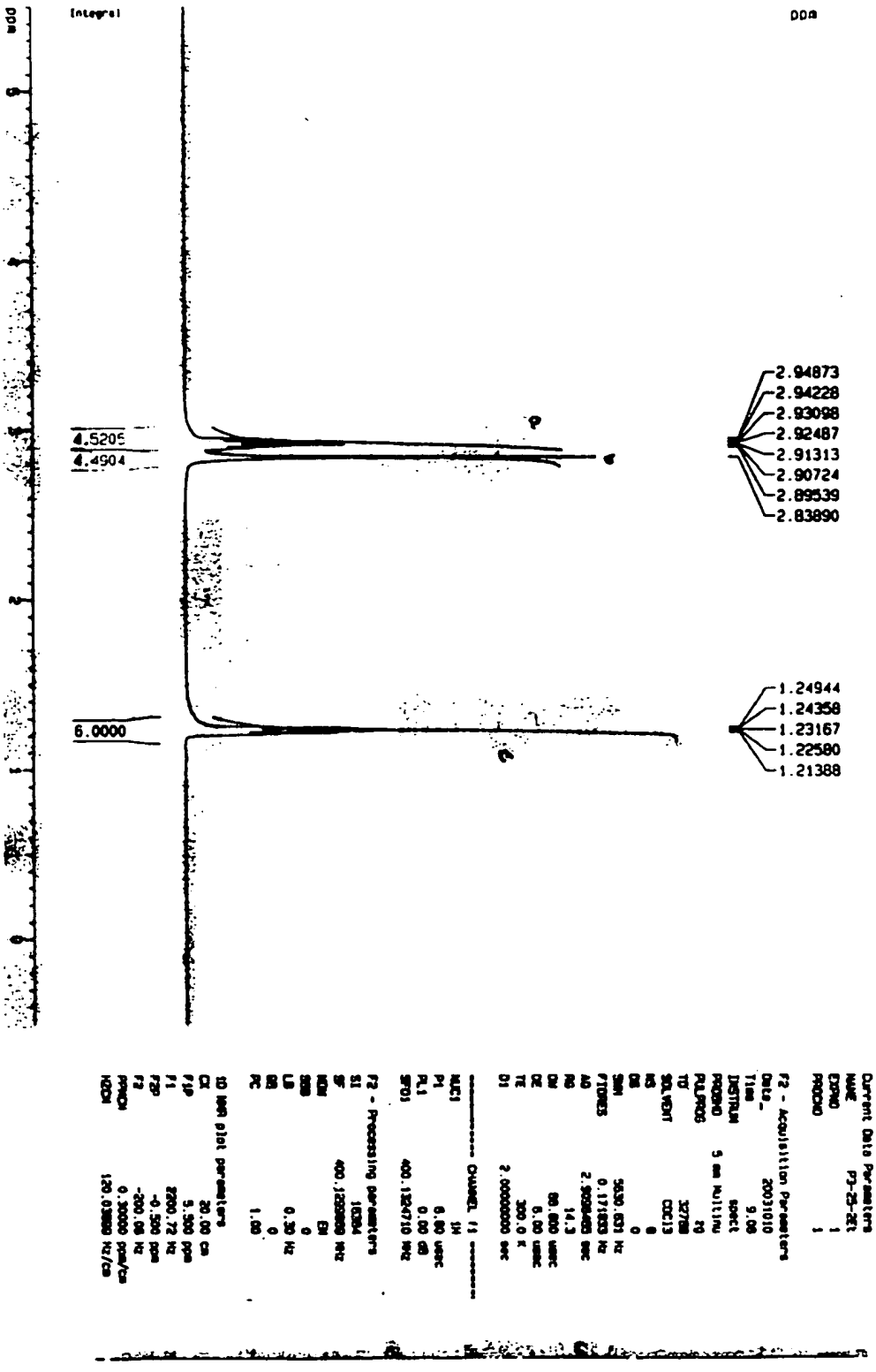
FIG 6
7





$CH_3-\overset{\oplus}{Ag}-NH_2CH_3 \cdot Tf_2N^{\ominus}$

Fig 8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6.0000
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2.94228
2.93098
2.92487
2.91313
2.90724
2.89539
2.83890
1.24944
1.24358
1.23167
1.22580
1.21388

Current Data Parameters
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EXPNO 1
PROCNO 1
F2 - Acquisition Parameters
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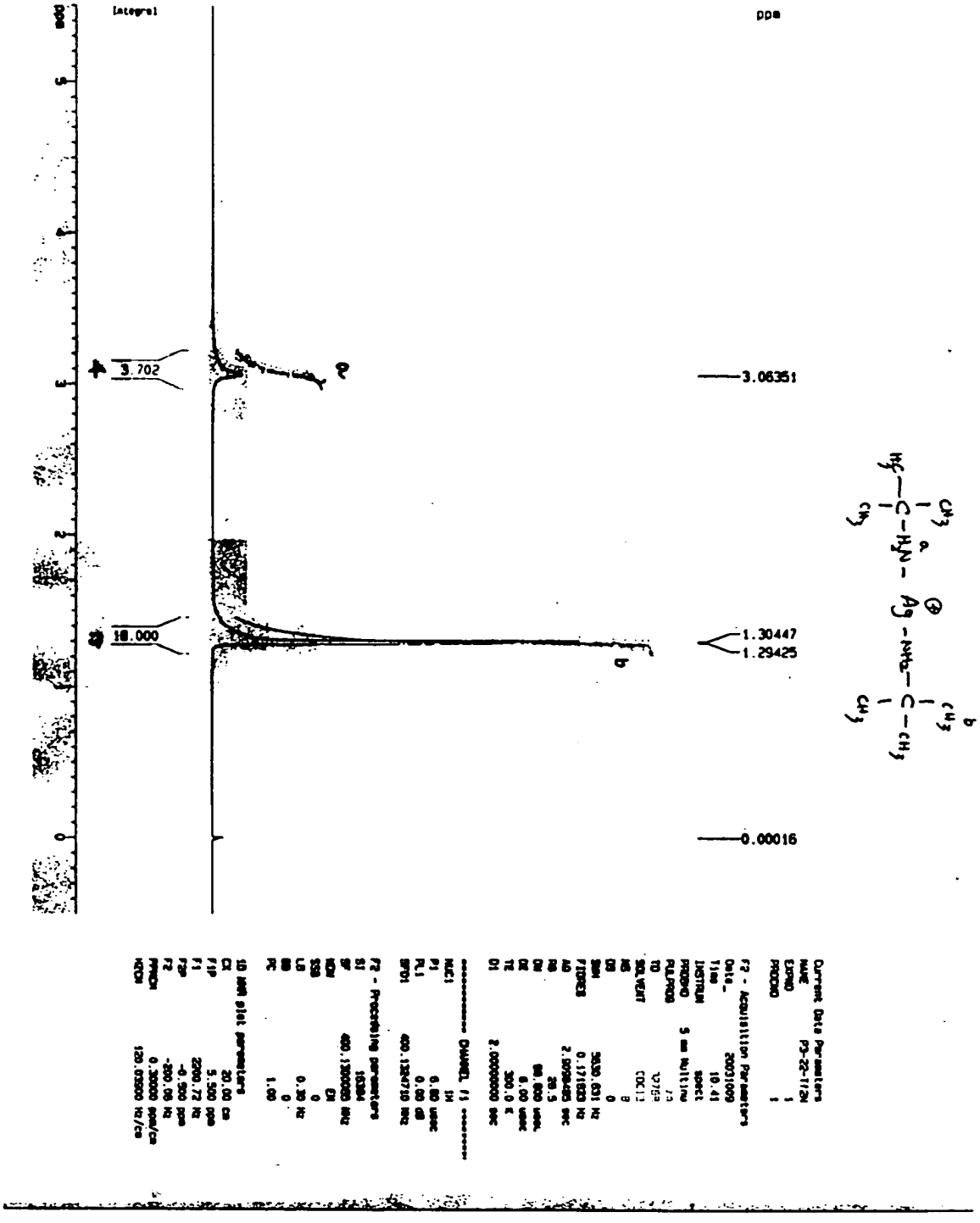
INSTRUM spect
PROBHD 5 mm Multinu
PULPROG zg
TD 32768
SOLVENT CDCl3
NS 8
DS 0
SWH 5630.631 Hz
FIDRES 0.171833 Hz
AQ 2.9098403 sec
RG 14.3
DW 88.800 usec
DE 6.00 usec
TE 300.0 K
D1 2.00000000 sec
======== CHANNEL f1 ========
NUC1 1H
P1 6.00 usec
PL1 0.00 dB
SFO1 400.1324710 MHz
F2 - Processing parameters
SI 16384
SF 400.1320000 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
1D NMR plot parameters
CX 20.00 cm
F1P 5.500 ppm
F1 2200.72 Hz
F2P -0.500 ppm
F2 -200.08 Hz
PPMCM 0.35000 ppm/cm
HZCM 120.03960 Hz/cm

a b c
H3CH2CN-Ag-NH2CH2CH3
Tf2N

Fig 9


Integral
ppm
3.702
18.000
3.06351
1.30447
1.29425
0.00016
a
b
Current Data Parameters
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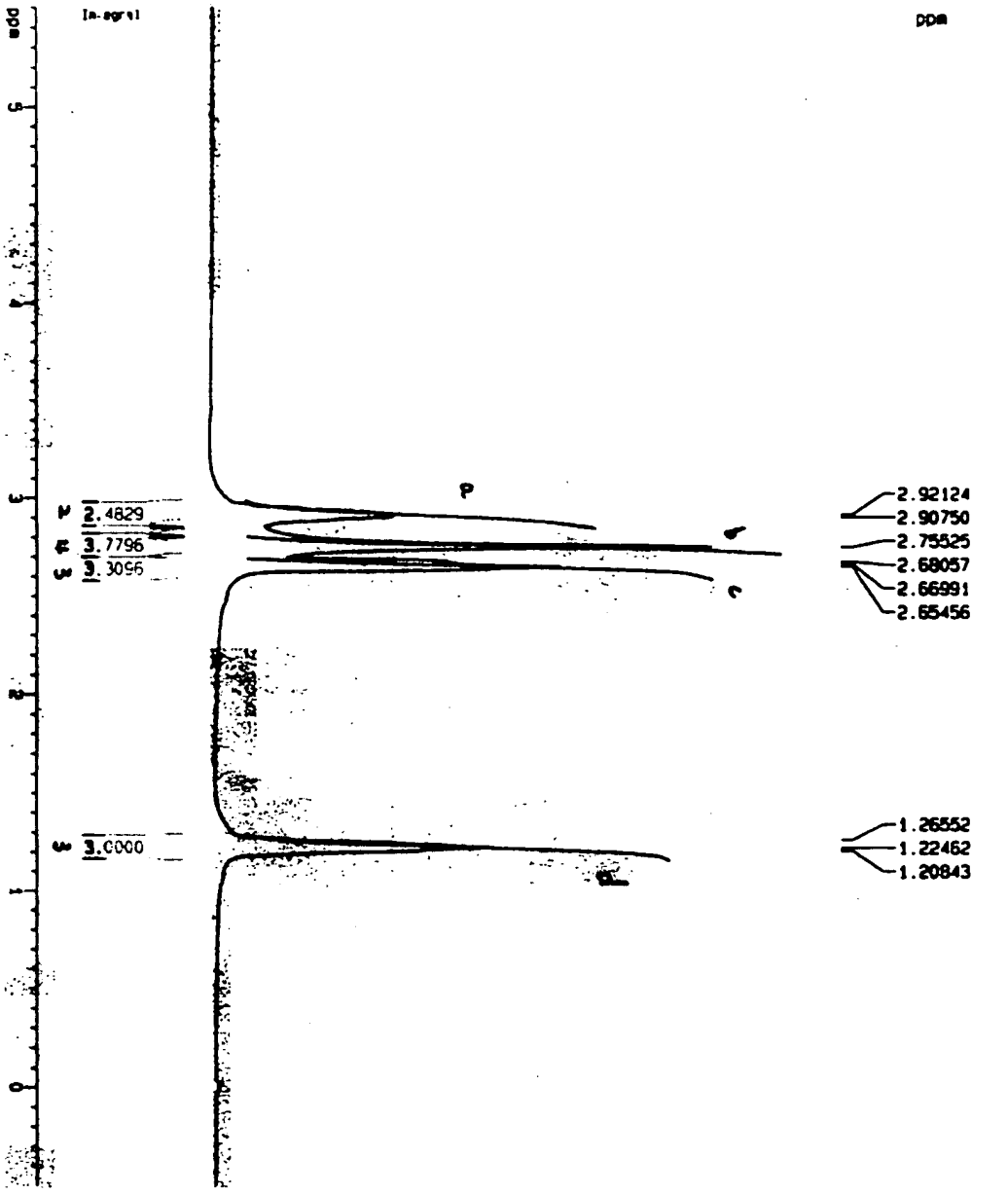
EXPNO 1
PROCNO 1
F2 - Acquisition Parameters
Date_ 20031009
Time 10.41
INSTRUM spect
PROBHD 5 mm Multinu
PULPROG zg
TD 65536
SOLVENT CDCl3
NS 8
DS 0
SWH 3630.031 Hz
FIDRES 0.171820 Hz
AQ 2.0956965 sec
RG 28.5
DW 68.800 usec
DE 6.00 usec
TE 300.0 K
D1 2.00000000 sec
------------ CHANNEL f1 ------------
NUC1 1H
P1 6.80 usec
PL1 0.00 dB
SFO1 400.1324710 MHz
F2 - Processing parameters
SI 16384
SF 400.1300000 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
1D NMR plot parameters
CX 20.00 cm
F1P 5.500 ppm
F1 2200.72 Hz
F2P -0.500 ppm
F2 -200.06 Hz
PPMCM 0.33000 ppm/cm
HZCM 120.03900 Hz/cm

Fig 10



$CH_3NH_2-Ag-NH_2CH_2CH_3$ $Tf_2N^{\ominus}$

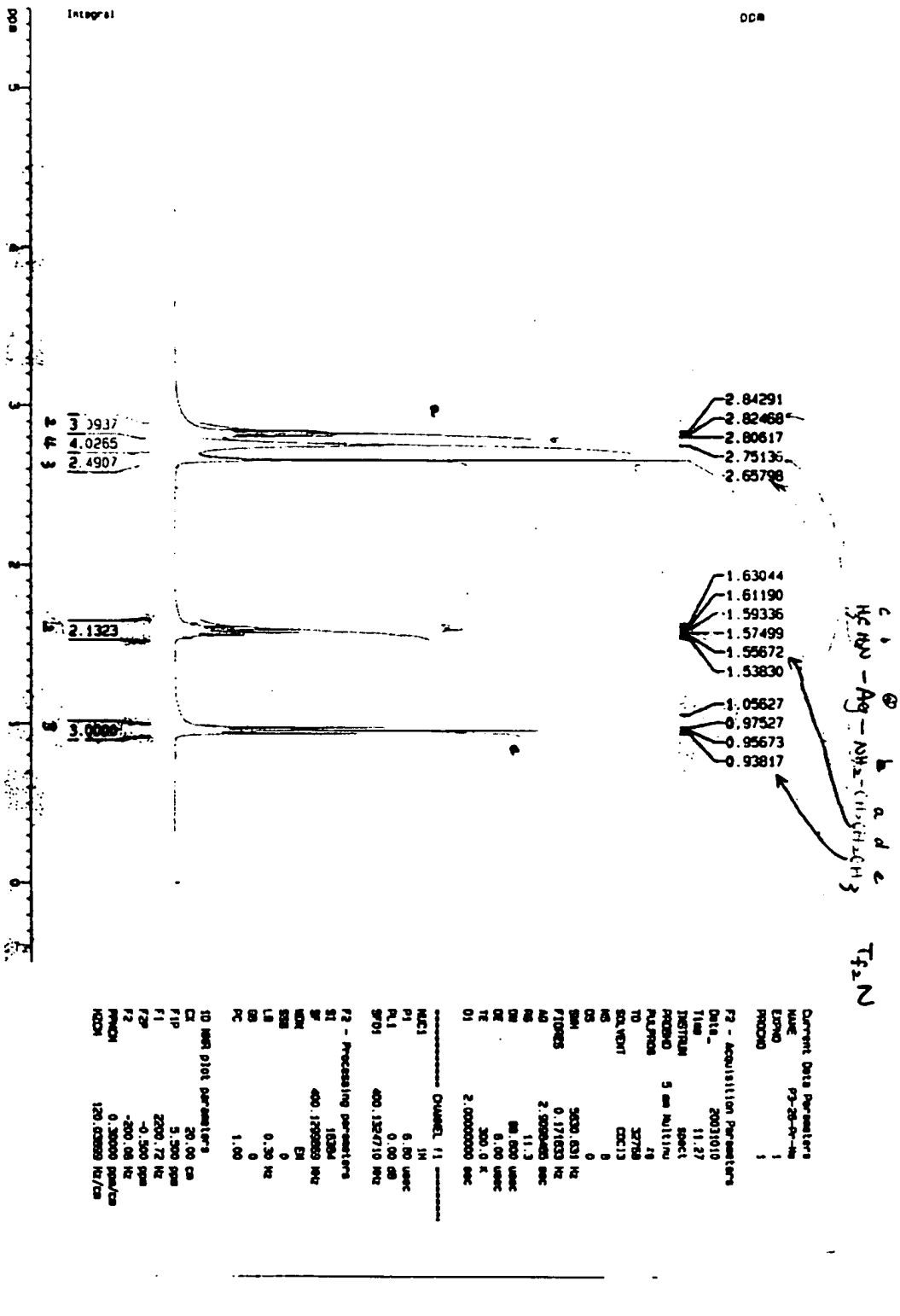
Current Data Parameters
NAME P3-27-01-4b
EXPNO 1
PROCNO 1

F2 - Acquisition Parameters
Date_ 20031010
Time 12.36
INSTRUM spect
PROBHD 5 mm Multinu
PULPROG zg
TD 32768
SOLVENT CDCl3
NS 8
DS 0
SWH 9530.631 Hz
FIDRES 0.171833 Hz
AQ 2.5559680 sec
RG 10.1
DW 80.000 usec
DE 6.00 usec
TE 300.0 K
D1 2.00000000 sec
------- CHANNEL f1 -------
NUC1 1H
P1 8.80 usec
PL1 0.00 dB
SFO1 400.1324710 MHz

F2 - Processing parameters
SI 16384
SF 400.1300084 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

1D NMR plot parameters
CX 20.00 cm
F1P 5.500 ppm
F1 2200.72 Hz
F2P -0.500 ppm
F2 -200.06 Hz
PPMCM 0.30000 ppm/cm
HZCM 120.03888 Hz/cm

Fig 11



Current Data Parameters
NAME 23-26-P-Ac
EXPNO 1
PROCNO 1

F2 - Acquisition Parameters
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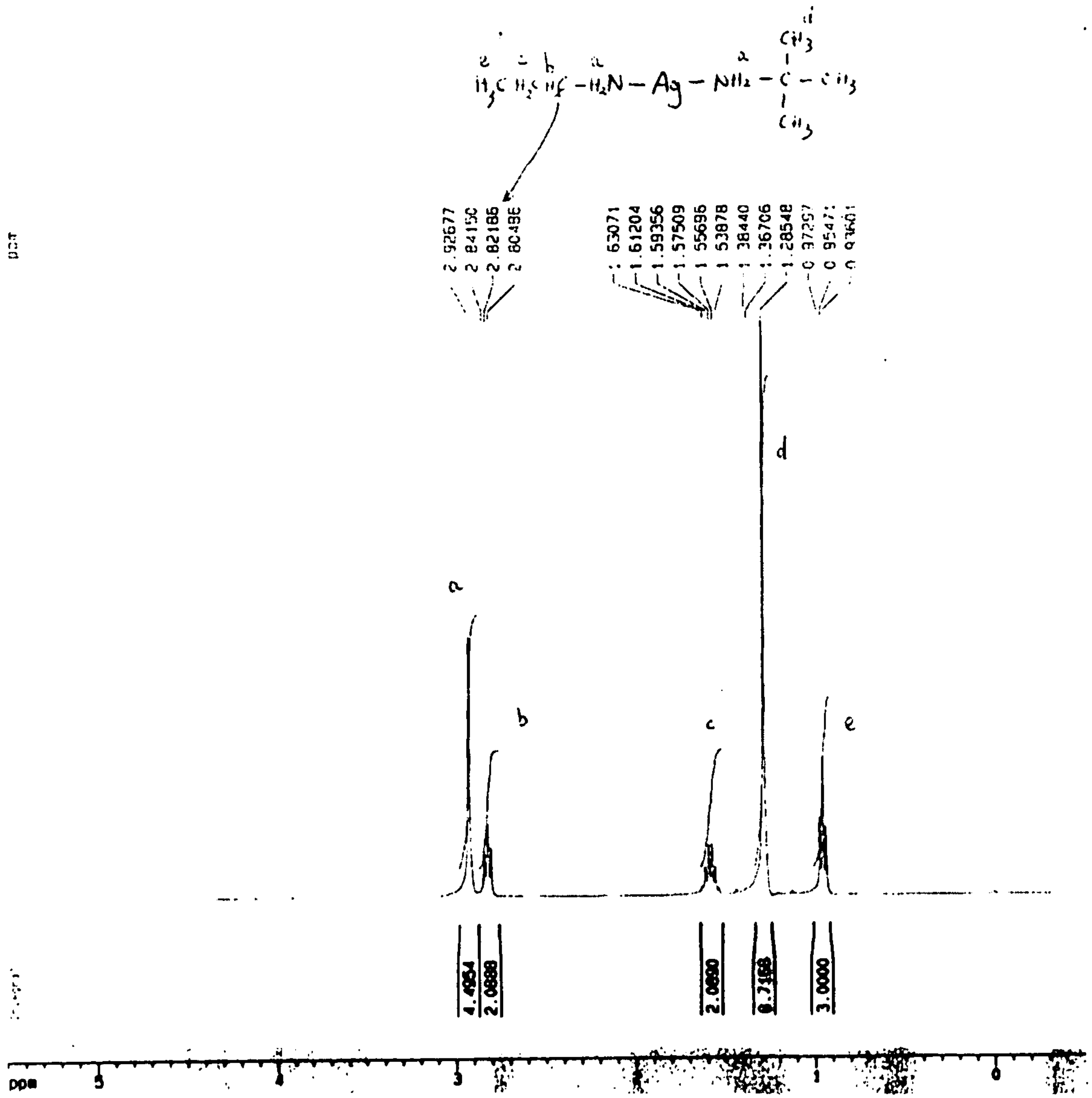
Time 11:27
INSTRUM spect
PROBHD 5 mm Multinu
PULPROG zg
TD 32768
SOLVENT CDCl3
NS 8
DS 0
SWH 5000.801 Hz
FIDRES 0.171833 Hz
AQ 2.5559680 sec
RG 11.3
DW 80.000 usec
DE 6.00 usec
TE 300.0 K
D1 2.00000000 sec

======== CHANNEL f1 ========
NUC1 1H
P1 9.00 usec
PL1 0.00 dB
SFO1 400.1327010 MHz

F2 - Processing parameters
SI 16384
SF 400.1300000 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

1D NMR plot parameters
CX 20.00 cm
F1P 5.000 ppm
F1 2000.72 Hz
F2P -0.500 ppm
F2 -200.08 Hz
PPMCM 0.30000 ppm/cm
HZCM 120.03983 Hz/cm

Fig 12



Current Data Parameters		
NAME	P3-24-tB-Pr	
EXPNO	1	
PROCNO	1	
F2 - Acquisition Parameters		
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Time	9.18	
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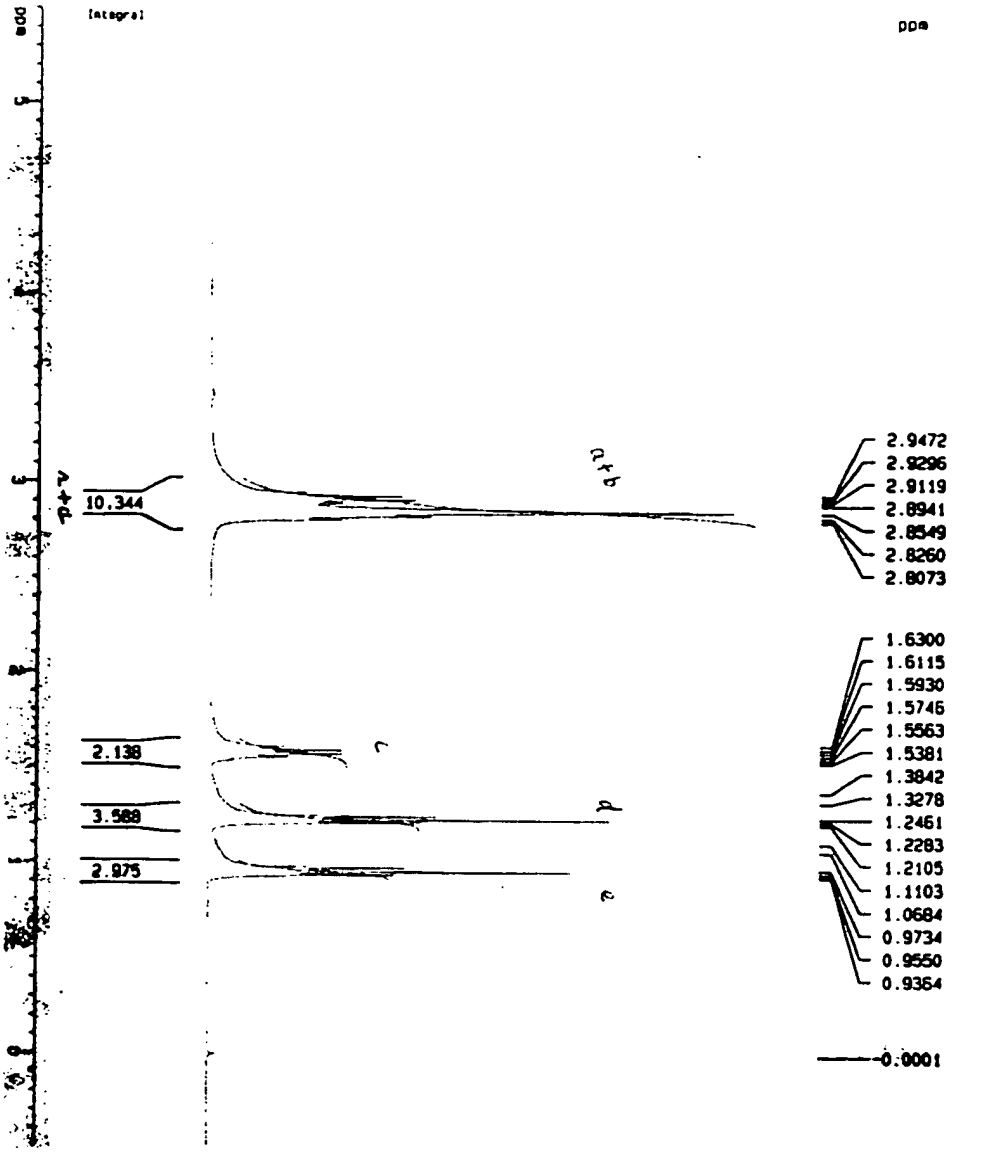
PROBHD	5 mm Multinu	
PULPROG	zg	
TD	32768	
SOLVENT	CDCl3	
NS	8	
DS	0	
SWH	5630.631	Hz
FIDRES	0.171833	Hz
AQ	2.9098485	sec
RG	11.3	
DW	88.800	usec
DE	6.00	usec
TE	300.0	K
D1	2.00000000	sec
======== CHANNEL f1 ========		
NUC1	1H	
P1		
PL1	0.00	dB
SFO1	400.1324710	MHz
F2 - Processing parameters		
SI	16384	
SF	400.1299914	MHz
WDW	EM	
SSB	0	
LB	0.30	Hz
GB	0	
PC	1.00	
1D NMR plot parameters		
CX	20.00	cm
F1P	5.000	ppm
F1	2200.72	Hz
F2P	-0.500	ppm
F2	-200.06	Hz
PPMCM	0.30000	ppm/cm
HZCM	120.03800	Hz/cm

Fig 13



poly(ethylene oxide) $H_3C-H_2C-HN-Ag-NH_2-CH_2CH_2-CH_3 \cdot Tf_2N^-$

Current Data Parameters
NAME P5-21-1TB
EXPNO 1
PROCNO 1

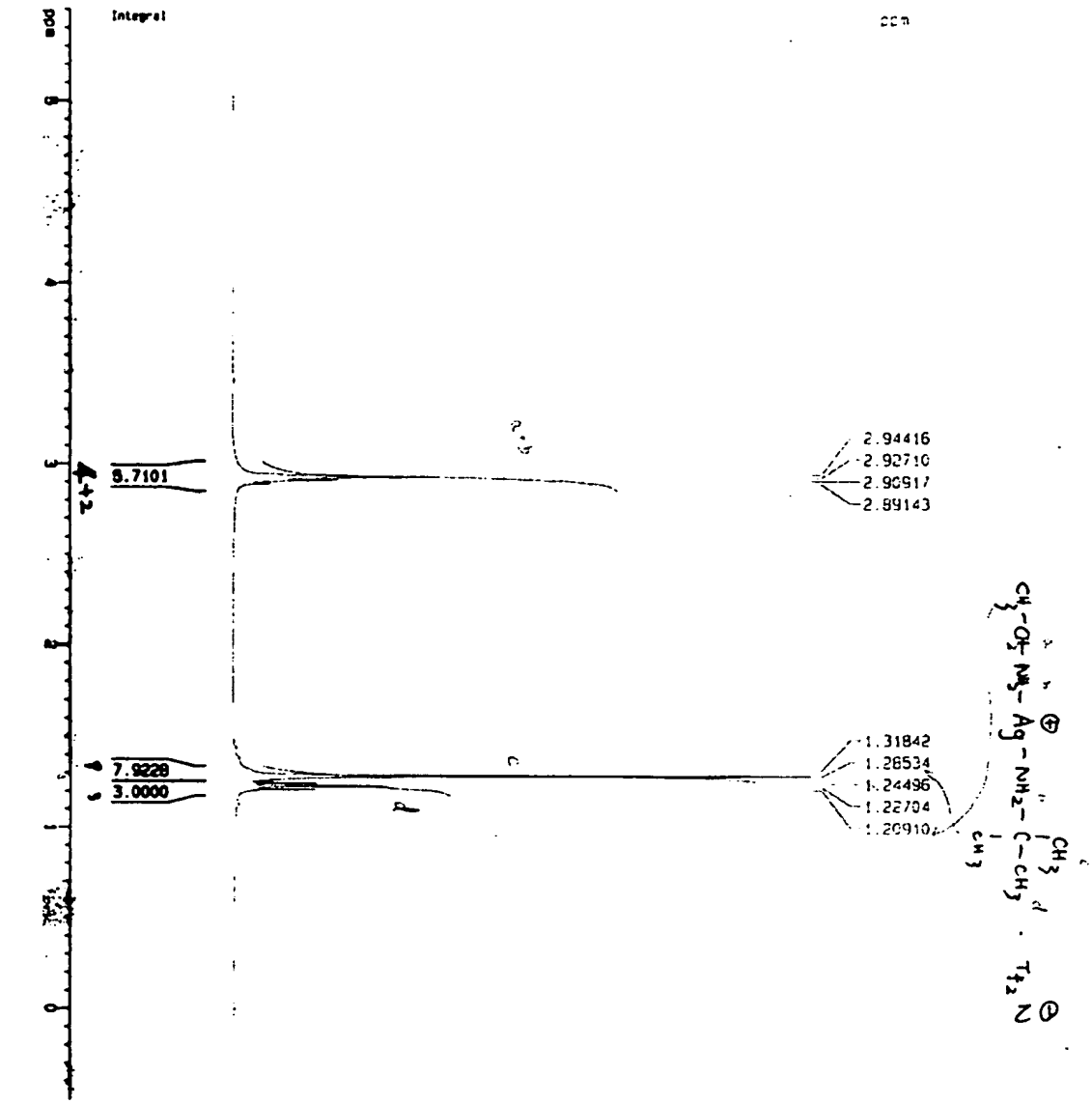
F2 - Acquisition Parameters
Date_ 20031009
Time 8.32
INSTRUM spect
PROBHD 5 mm Multinu
PULPROG zg
TD 32768
SOLVENT CDCl3
NS 8
DS 0
SWH 5630.631 Hz
FIDRES 0.171833 Hz
AQ 2.9098496 sec
RG 14.3
DW 88.800 usec
DE 6.00 usec
TE 300.0 K
D1 2.0000000 sec

======== CHANNEL f1 ========
NUC1 1H
P1 8.00 usec
PL1 0.00 dB
SFO1 400.1324710 MHz

F2 - Processing parameters
SI 16384
SF 400.1300000 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

1D NMR plot parameters
CX 20.00 cm
F1P 5.500 ppm
F1 2200.72 Hz
F2P -0.500 ppm
F2 -200.06 Hz
PPMCM 0.30000 ppm/cm
HZCM 120.03000 Hz/cm

Fig 14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3.0000
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2.92710
2.90917
2.89143
1.31842
1.28534
1.24496
1.22704
1.20910

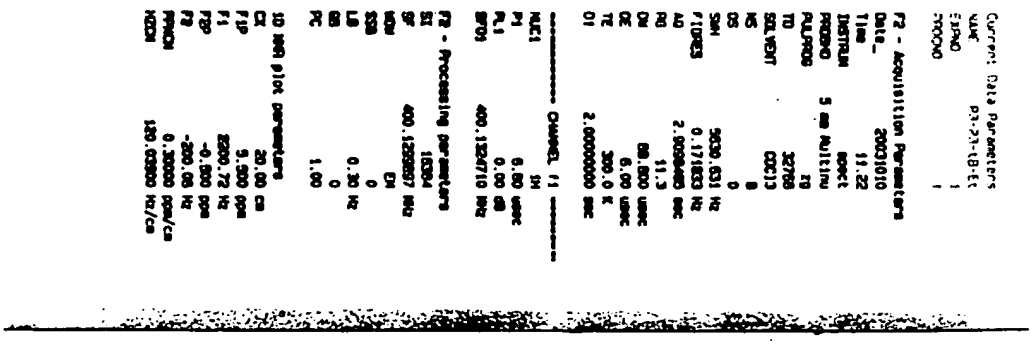
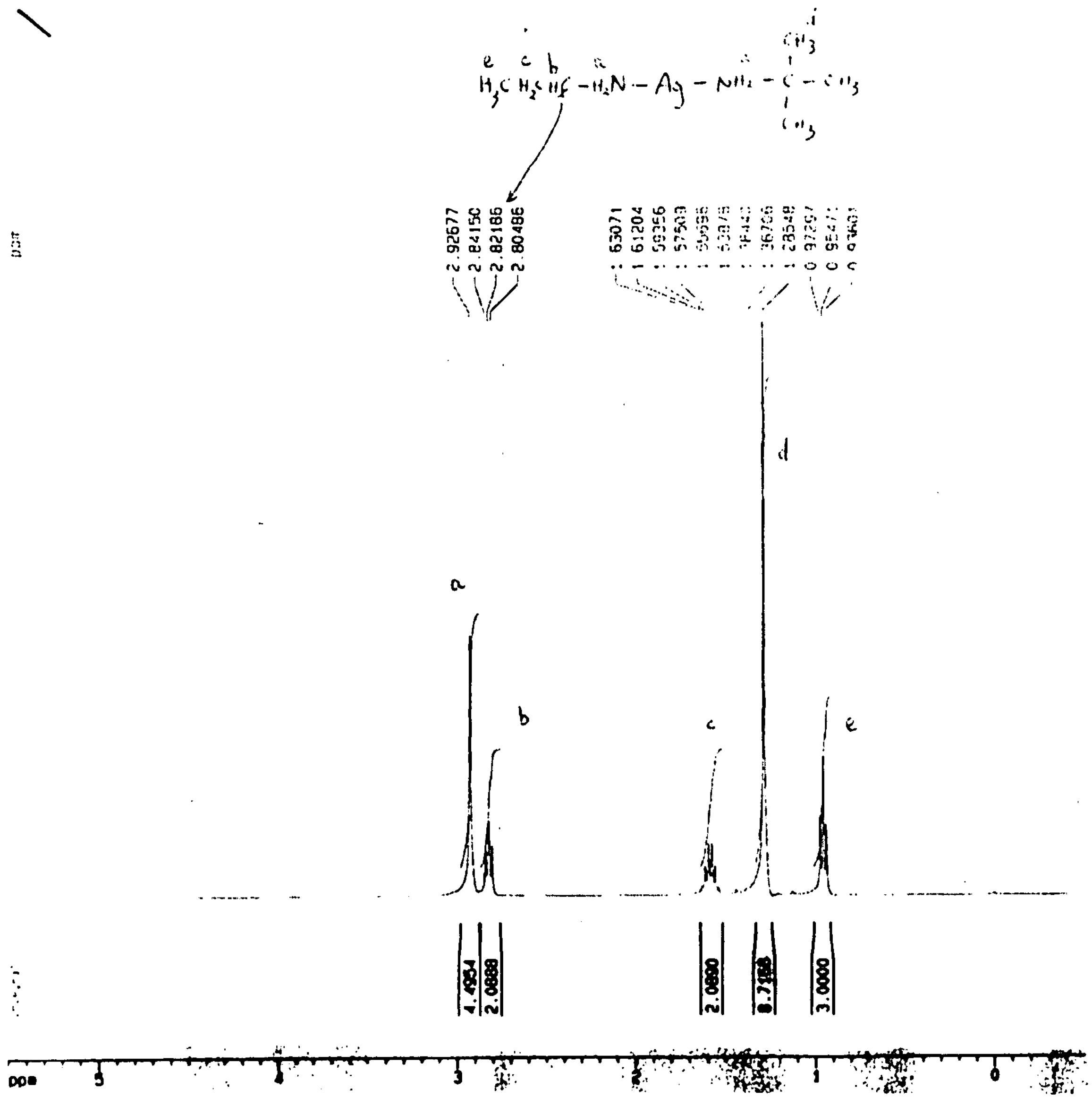


Fig 15



Current Data Parameters
NAME P3-24-tB-Pr
EXPNO 1
PROCNO 1

F2 - Acquisition Parameters
Date_ 20031010
Time 9.18
INSTRUM spect
PROBHD 5 mm Multinu
PULPROG zg
TD 32768
SOLVENT CDCl3
NS 8
DS 0
SWH 5630.631 Hz
FIDRES 0.171833 Hz
AQ 2.9098485 sec
RG 11.3
DW 88.800 usec
DE 6.00 usec
TE 300.0 K
D1 2.00000000 sec

CHANNEL f1
NUC1 1H
P1
PL1 0.00 dB
SFO1 400.1324710

F2 - Processing parameters
SI 16384
SF 400.1299914 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

1D NMR plot parameters
CX 20.00 cm
F1P 5.500 ppm
F1 2200.72 Hz
F2P -0.500 ppm
F2 -200.06 Hz
PPMCM 0.30000 ppm/cm
HZCM 120.03800 Hz/cm

Fig 16

C-13 NMR spectrum of $Ag(H_2N\text{-}C_3H_7)_2^+$ Tf_2N^- RTIL.